Test Report

MONOCHROME LASER PRINTERS
Ricoh Aficio AP400N
26 PPM

BUYERS LABORATORY INC
20 HIGHLY RECOMMENDED 04
LAB TESTED

***Test period duration*:**
Three months, including a 75,000-impression durability test

Manufacturer:

Ricoh Corporation
West Caldwell, NJ
Made in China

Suggested retail price: $899 for the standard configuration; $2,319 as tested, with two additional 500-sheet paper trays ($275 each), a duplex unit ($195), 6-GB hard drive ($400) and 256 MB of additional memory ($275).

Serial number: 00236801021

Type: Desktop, laser printing, cut-sheet bond paper, dry toner, monocomponent developing, heat and pressure fusing.

Controller: Ricoh controller based on a TX4955 300-MHz processor.

Manufacturer's rated engine life: Ricoh does not release this information.

Manufacturer's maximum rated monthly volume: Up to 150,000 impressions.

BLI's recommended monthly volume for optimum performance: Up to 60,000 impressions.

GENERAL APPRAISAL

Proving itself to be an excellent choice for mid-size to large workgroups, the Ricoh Aficio AP400N provided an exceptional overall performance during BLI's three-month evaluation. The 26-ppm laser printer, which supports up to legal-size output, demonstrated flawless reliability, requiring no service and operating without even a single misfeed during its 75,000-impression test.

Another strength of the Ricoh Aficio AP400N demonstrated in testing is its excellent productivity. Based on a 300-MHz processor, the AP400N demonstrated the fastest first-print-out times for the Word and PageMaker test files of tested monochrome printers in the 21- to 31-ppm speed range. First-print-out times for the TIFF, PDF and JPG files used

continued

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General Appraisal *continued*

in testing are among the best seen to date by BLI. Testing also revealed that the AP400N offers the best overall efficiency rates in both simplex and duplex modes for monochrome units in this speed range tested to date.

Offering maximum resolution of 1200 x 1200 dpi, the AP400N produced good print quality in testing, receiving BLI's highest image quality rating for all types of output (text, line art, halftones and solids). BLI technicians noted that output produced at 600 x 600 dpi was on the high end of the scale of what has been seen from other 600-dpi engines. Characters at were crisp and clearly formed, with only a slight toner spray that was visible only when magnified. In addition, horizontal lines were clean, with no stair-stepping apparent and the lines forming the circumference of circles were smooth and of consistent line weight. Halftone output was also good. The 1200-x-1200-dpi output was equally as good. Halftones were clearly visible in both resolution modes from the 3% to 82% dot-fill areas, which is a slightly broader range on the low end but a slightly narrower range on the high end than would be expected from a 600-dpi engine.

In addition, the unit's PCL 5e, PCL 6, Adobe PostScript 3 and RPCS print drivers, which support Windows 95, 98, 2000, NT 4.0, Me and XP, as well as Mac OS 8.6 and later, were well laid out and easy to use.

Enhancing ease of use from the desktop is the good feedback on device and print job status provided by the SmartDeviceMonitor utility. The user can configure the utility to send pop-up messages, to function with only one or all of the Aficio AP400N print drivers loaded on the workstation, and can specify whether or not to start the utility at all. In addition, the unit's embedded Web page offers device status information such as paper size and gauge, toner gauge and temporary job history, as well as a listing of current settings and error messages.

Also contributing to the Ricoh Aficio AP400N's good overall ease of use are simple procedures for removing paper jams, loading paper and adjusting paper drawers. In addition, BLI technicians found the procedures for replacing the unit's toner cartridge to be clean and straightforward. Though it did not require replacement during the test period, a maintenance kit consisting of the fusing unit, transfer roller, friction pads and paper feed rollers, must be replaced by a service technician after 90,000 impressions.

Connectivity

The Ricoh Aficio AP400N was connected to BLI's test network via its standard 10/100BaseTX Ethernet interface (USB and parallel ports are also standard). During installation, the SmartDeviceMonitor utility automatically locates the device and displays the IP address, allowing the administrator to simply select it to create the port, and automatically detects the installed hardware when using the PCL drivers. For the PostScript and RPCS drivers, the configured options must be manually specified by the user. The drivers offer a good feature set, including N-up printing (two to 16 images per page), proof print and a save-settings mode.

Other noteworthy features include above-average standard and maximum memory

continued

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General Appraisal *continued*

capacities of 64 MB and 320 MB, respectively, and above-average standard and maximum paper capacities of 600 and 1,600 sheets, respectively. An energy-save mode reduces power consumption from as high as 550 watts when printing to only 7.5 watts after a specified period of time.

Shortcomings

A few shortcomings of the Ricoh Aficio AP400N were observed in testing: 1) Ease of adjusting paper drawers was rated "Fair" because, in addition to adjusting the drawer for length and width of paper loaded, users must set a paper size dial to match the paper size and feed direction.

Pricing Analysis And Summary

BLI's pricing analysis reveals that the Ricoh Aficio AP400N is priced competitively with other legal-size monochrome printers in this speed range with similar standard features, including network connectivity and support for up to legal-size output, though the unit's supplies cost per page is the lowest for tested monochrome printers in the same speed range. In fact, the supplies cost per page, at 1.14 cents, is 42% lower than the average (1.97 cents) for competitive printers tested.

Based on its perfect reliability, excellent productivity, good output quality, thorough network management utilities and good overall economy, BLI highly recommends the Ricoh Aficio AP400N for mid-size to large workgroups printing up to 60,000 impressions per month.

Print Quality:

Text: ..... Good
Line art: ..... Good
Halftones: ..... Good
Solids: ..... Good

Ease of use: ..... Good

Ease of maintenance: ..... Good

Estimated waste: ..... Low

Estimated downtime: ..... Low

Misfeeds: 0

Misfeed rate: ..... Not applicable

Total service calls (including PMs): 0

MIBF: ..... Not applicable

MIBS: ..... Not applicable

Toner yield (at 5% coverage): ..... 20,358 impressions

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FEATURES

Automatic features: Auto tray switching (if optional tray is installed), auto emulation switching.

Client operating system support: Microsoft Windows 95, 98, NT 4.0, 2000, Me and XP; Mac OS 8.6+, OS X 10.1+.

Control codes/tracking: 400 user codes via SmartDeviceMonitor.

Duplex: Optional.

Energy-save mode: Reduces power consumption from a maximum of 550 watts to 7.5 watts (or 4.5 watts for the AP400) after a default 30 minutes of non-use (user-selectable for one, five, 15, 30, 45 and 60 minutes).

Fonts: 136 Adobe PostScript 3, 39 PCL (scalable).

Interface(s): Standard parallel, USB and 10/100BaseTX Ethernet interfaces.

Languages: Fourteen languages are available from the control panel (English, German, French, Italian, Spanish, Portuguese, Czech, Swedish, Finnish, Dutch, Norwegian, Danish, Polish and Hungarian).

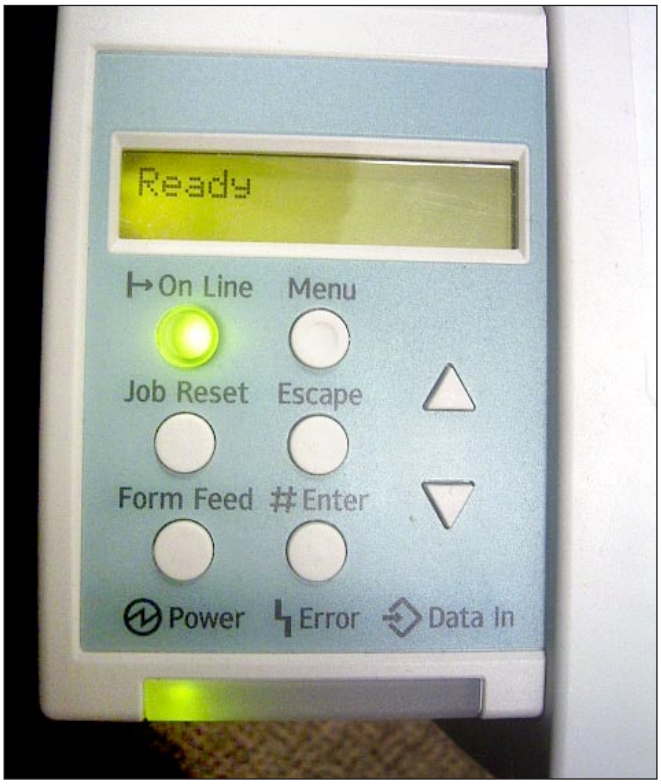
Memory: Standard 64 MB of RAM (expandable to 320 MB).

*Network operating system support***:** Microsoft Windows NT 4.0 Server, 2000 Server, Advanced Server and Server 2003; NetWare 3.11/4.1+; UNIX (Sun Solaris 2.6/7/8/9; HP-UX 10x/11.x; SCO OpenServer 5.x; IBM AIX 4.3/5L c5.1; and Red Hat Linux 6.x/7x).

Printer languages: PCL 5e/6, Adobe PostScript 3, PDF, Ricoh proprietary RPCS (Refined Printing Command Stream).

Resolution: 1200 x 1200 dpi, 600 x 600 dpi and 300 x 300 dpi.

Secure print: Yes. Ricoh refers to this feature as "Locked Print."



Ricoh Aficio AP400N Control Panel

Other features: Edge smoothing; toner save; edge-to-edge printing; recovery printing mode; duplex mode; watermarks; reduction/enlargement (25% to 400%); sample print, slip-sheet mode and booklet printing.

Control Panel

Type: The control panel consists of a 32-character LCD (two lines of 16 characters each) that allows the user to access the operation panel menus and six hard keys (On Line, Menu, Job Reset, Escape, Form Feed and Enter), which are used to view and/or change the network configuration and/or printer settings of the AP400N.

Indicators/prompts: An LED illuminates to indicate when the printer is online and flashes when data is being received.

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Ricoh Aficio AP400N Accessories

***500-Sheet Paper Feed Units*:**	Suggested retail price, $275.
Envelope Feeder:	Suggested retail price, $120.
Duplex Unit (AD450):	Suggested retail price, $195.
64-MB Memory:	Suggested retail price, $345.
128-MB Memory:	Suggested retail price, $440.
256-MB Memory:	Suggested retail price, $800.
Blue Tooth Wireless Interface:	Suggested retail price, $360.
IEEE 802.11b Wireless LAN Interface:	Suggested retail price, $350.
IEEE 1394 Interface:	Suggested retail price, $475.
Hard Disk Drive (Type 2600):	Suggested retail price, $400.

TEST RESULTS AND OBSERVATIONS

Test equipment: BLI's dedicated test network, consisting of Windows NT 4.0 servers and Windows 98, 2000 and XP workstations, 10/100BaseTX network switches and CAT5 cabling.

Reliability

PMs/Malfunctions	Service Required	Meter Count (Impressions)	Impressions Between Service
Meter count (beginning of test)		0	
End of test period		75,000	
Total misfeeds/misfeed rate	0		
Service calls	0		
PMs	*		
Total service calls (including PMs)	0		
M.I.B.F.[1]	Not applicable		
M.I.B.S.[2]	Not applicable		

** Ricoh does not schedule PMs.*

[1] Mean Impressions Between Failures (To obtain this number, BLI divides the total number of impressions produced during the test period by the number of service calls required. In actuality, it reflects the average number of impressions produced without a malfunction.)

[2] Mean Impressions Between Service (To obtain this number, BLI divides the total number of impressions produced during the test period by the number of service calls, including preventive maintenance calls, required. In actuality, it reflects the average number of impressions produced without a service call.)

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TEST RESULTS AND OBSERVATIONS *continued*

Maintenance

Ricoh does not schedule PMs; instead, the user performs any preventive maintenance required when replacing the toner cartridge. The maintenance kit, which contains the fusing unit, transfer roller, friction pads and paper feed rollers, must be replaced after 90,000 pages. Ricoh does not provide the cost of the maintenance kit and replacement by a service technician. End-users will need to contact their local dealer.

Guarantee/Warranty: The Ricoh AP400N is backed by a one-year parts and labor warranty.

Service pricing: Ricoh does not directly offer maintenance contracts. Contact your local Ricoh dealer.

User-Replaceable Consumables

15,000-page toner cartridge: Suggested retail price, $187.50. Manufacturer's rated yield, 15,000 pages at 5% coverage.

Maintenance kit: Suggested retail price, $197.25. Manufacturer's rated yield, 90,000 pages at 5% coverage.

Ease of replacing toner cartridge: Good. BLI technicians found the procedures for replacing the toner cartridge to be clean and straightforward.

TONER YIELD / SUPPLIES COST PER PAGE

Net Weight	Toner Yield (Impressions)	Impressions Per Gram	Toner Cost Per Page	Supplies Cost Per Page*
375.4 grams	20,358	54.2 grams	0.921¢	1.140¢

*The Ricoh Aficio AP400N supplies cost per page is based on Ricoh's suggested retail pricing, BLI's tested toner yield (using BLI's toner yield test original with 5% page coverage) and Ricoh's rated yield for the maintenance kit.

Ease of Operation

Documentation: Good. The Ricoh Aficio AP400N is bundled with a printed Setup Guide, a quick-reference sheet and an Operation Instructions CD-ROM that contains the Operating Instructions Print Reference Guide, Network Printing Guide, PostScript 3 Operation Instructions and Setup Guide, which are in PDF format and can be read online or printed out for reference. Another CD-ROM contains the Desktop Binder V2 Lite program, along with a Setup Guide in PDF format, which can be read online or printed out. A third CD-ROM contains all of the print drivers, Font Manager 2000 utility and SmartDeviceMonitor (Admin and Client versions). All of the manuals contain indexes and tables of contents.

Ease of use: Good. The AP400N ships with PCL 5e, PCL 6, PostScript 3 and RPCS (Refined Printing Command Stream) print drivers. The user can choose between a custom installation and a Quick Installation routine. PCL and RPCS print drivers and the SmartDeviceMonitor for Client utility are installed together when using the Quick Installation routine. Users can also custom install the PostScript 3, PCL and RPCS print drivers and the SmartDeviceMonitor for Client and SmartDeviceMonitor for Admin utilities. During the Quick Installation routine (for local printing), users are asked to select a language, and then select the printer whose printer port is displayed via the Add Printer and Utility Wizard. For network connections with TCP/IP, users select the printer whose

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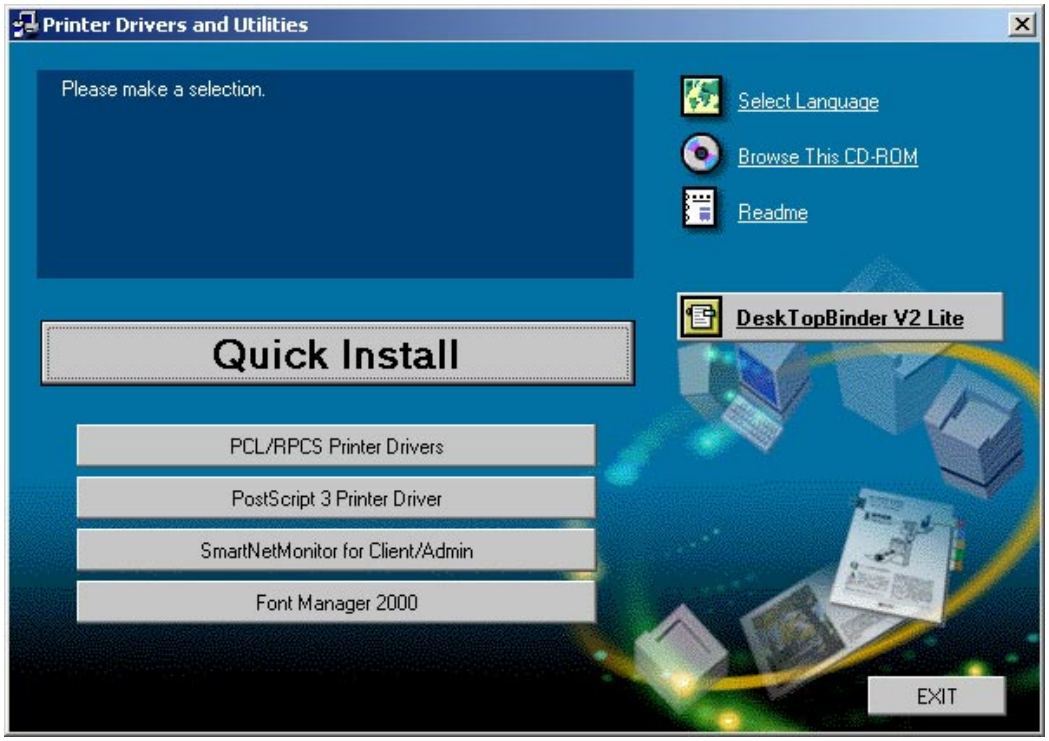
TEST RESULTS AND OBSERVATIONS *continued*

IP address is displayed. The installation routine walks the user through the rest of the installation. Ricoh's DesktopBinder V2 Lite (document management program) can be installed independent of the printer drivers at another time. Unlike the print driver installations of most printers BLI has tested (where both PCL and PostScript drivers are usually installed at the same time), the Ricoh AP400N requires the user to install each driver separately.



Printer Driver and Utilities Window

Control panel status messages/job access: Error messages are displayed on the LCD of the Ricoh AP400N. Once the job has started printing, anyone may cancel the print job simply by pressing the "Job Set" key.

Feedback to PC workstations: Good. Feedback to the workstation is provided by the SmartDeviceMonitor utility, provided it has been installed on the workstation. The user can configure the utility to send pop-up messages and specify whether or not to start the utility at all. The user can configure the SmartDeviceMonitor utility to function with only one or all of the Aficio AP400N print drivers loaded on the local workstation. When SmartDeviceMonitor is launched, its icon appears on the toolbar. When the user right-clicks on the icon, the menu shows each of the drivers associated with SmartDeviceMonitor. If the user selects one of the drivers, the Properties screen for that driver will open. There are three tabs for the user to select from: the Status tab, which shows a graphical representation of

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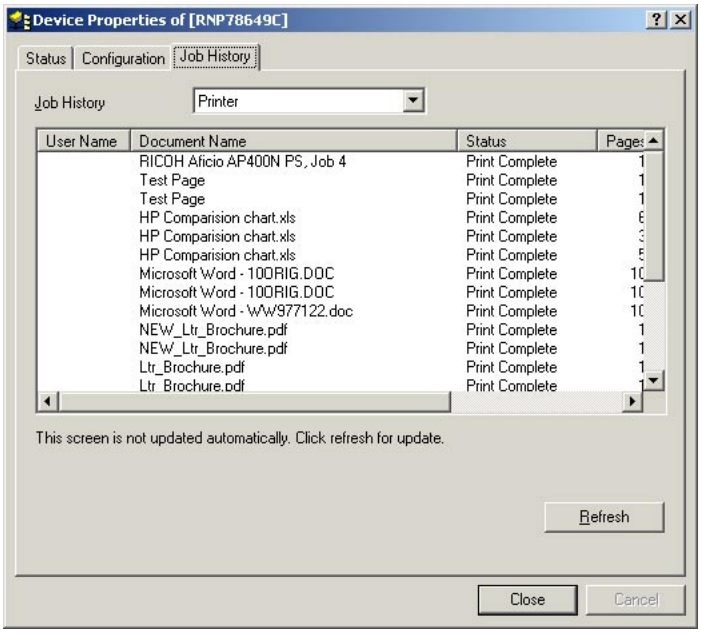
TEST RESULTS AND OBSERVATIONS *continued*

the device and its options, along with the current status of the device; the Configuration tab, which graphically displays the configuration of the device (Input Tray, Output Tray, Toner, Function, Option, System, Printer Language and Network I/F) as icons that, when selected, display a detailed description of the feature (such as the amount of toner remaining in the cartridge); the Job History tab, which lists completed print jobs and the status of pending print jobs (SmartDeviceMonitor Client lists jobs for the current user, while the Admin version lists jobs for all users). The display shows User Name, Document Name, Status, Pages, Started At (date and time) and User ID.



Device Properties Window (Job History Tab)

The "Extended Features" selection of SmartDeviceMonitor enables the user to specify the conditions to monitor and when notification via pop-up windows is desired. The selections available are: "Notify of printout/data transmission," which launches a pop-up window whenever a print job is sent and upon completion of a job; "Notify of printout/data transmission cancellation" and "Notify when errors occur while printing." The user can also configure "Recovery Printing" (a good feature—proprietary to Ricoh—that allows the user to either manually or automatically redirect problem print jobs to another Ricoh printer on the network). Users do not have to have SmartDeviceMonitor running to check on the status of the device, as status information is also available from the embedded Web page, Ricoh Web Image Monitor, which gives users access to the Printer Error Log (displays the User ID number, document name and error type). Recovery Printing is a special feature that when enabled via SmartDeviceMonitor for Client allows the Ricoh AP400N to redirect print jobs from the default printer to an alternate printer; this feature only works with other Ricoh products or compatibles. (Note: users are required to reboot the workstation after installation of the SmartDeviceMonitor utility.)

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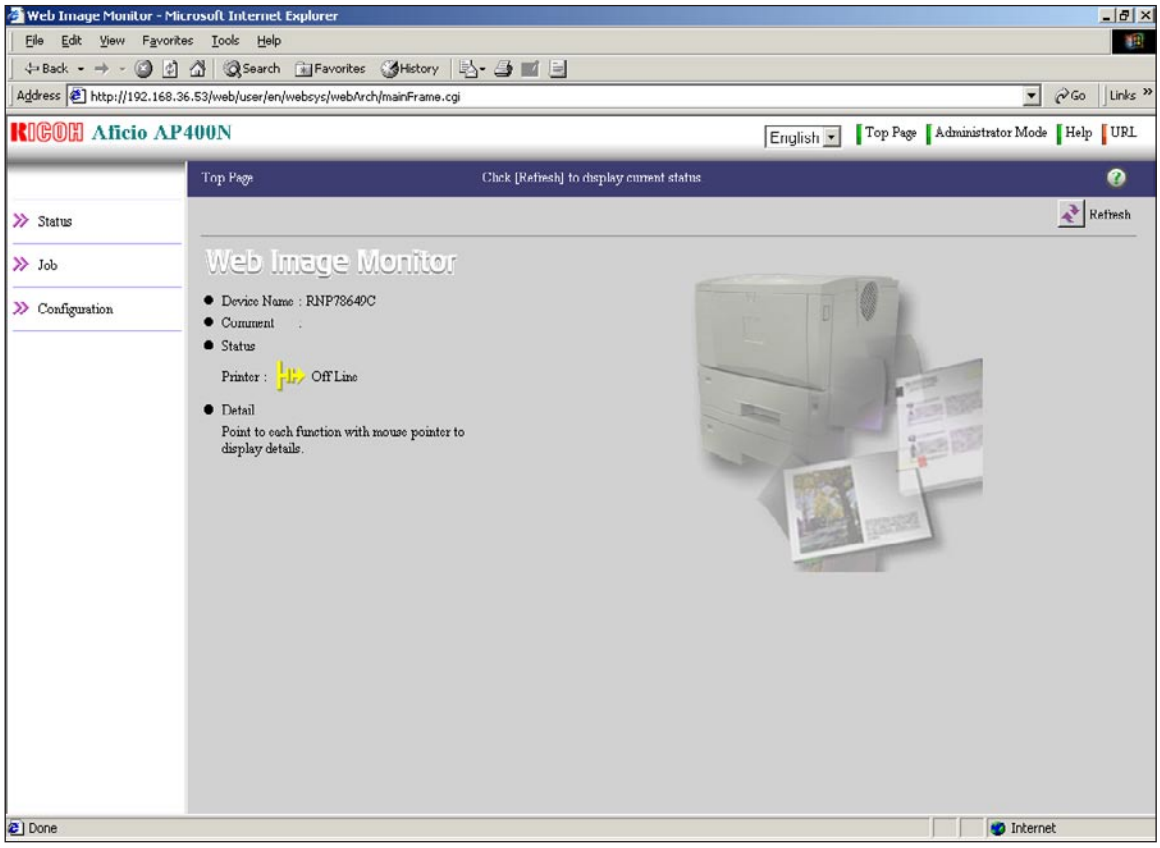
TEST RESULTS AND OBSERVATIONS *continued*



Ricoh Web Image Monitor (Embedded Web Page)

Pop-up messages: Yes.

Icon alerts: Yes.

Audible alerts: Yes.

E-mail alerts: Yes, via Ricoh's Web Image Monitor.

Device status: Yes. Information on device status is available when the Extended Features settings within SmartDeviceMonitor for Client is launched, via pop ups if the utility is configured as such, or by accessing the embedded Web page. See "Feedback to PC workstations."

Paper supply gauge from driver/utility/Web: No/Yes/Yes. A graphical icon generated by the embedded Web page displays low on paper or out of paper. This notification can be delivered either as an icon alert or a pop-up message. When using the embedded Web page, information regarding paper size and paper type, or whether paper trays are low or empty is available.

Paper size status from driver/utility/Web: No/Yes/Yes. Information regarding paper size can be obtained from the Status Window and the embedded Web page.

Print job status: Yes. Users can obtain status information from the embedded Web page or the SmartDeviceMonitor Status utility.

Ease of removing misfeeds: Good. Front-loading design with seven access points for removing misfeeds.

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TEST RESULTS AND OBSERVATIONS *continued*

An error message appears at the control panel to indicate "2xx Paper Jam;" users must refer to the Printer Reference manual.

Ease of loading paper: Good. Loading paper into the drawers is easy; the drawers have spring-loaded ramps but no corner separators to hinder access when loading paper. Users must set a paper size dial to match the paper size and feed direction of the paper loaded in the tray.

Ease of adjusting paper drawers: Fair. The paper drawers have two separate slide guides, one for length and one for width, to accommodate paper ranging in size from 5-1/2" x 8-1/2" to 8-1/2" x 14" and in weight from 16-lb. to 28-lb. bond paper. Users must set a paper size dial to match the paper size and feed direction of the paper loaded in the tray (see "Operator error").

Auto paper-size detection: No.

Auto tray switching: Yes. If the Ricoh AP400N is configured with another paper drawer that holds the same size paper, the printer will switch drawers and continue printing when one drawer runs out of paper.

Operator error: If the user neglects to set the "paper size" dial after changing the paper size in one of the drawers, users may print onto the wrong-size paper and misfeeding may occur.

Throughput Capabilities/Materials

Standard paper supply: One 500-sheet paper drawer and a 100-sheet multipurpose tray (bypass). The 500-sheet paper drawer is user-adjustable for sheets ranging in size from 5-1/2" x 8-1/2" to 8-1/2" x 14" and in weight from 16-lb. to 28-lb. bond. The 100-sheet multipurpose tray is user-adjustable for sheets ranging in size from 3-1/2" x 5-1/2" to 8-1/2" x 17" and in weight from 16-lb. to 28 lb bond, as well as envelopes (Monarch, Com 10, DL, C5 and C6).

Maximum number of available on-line paper sources with options: Four.

Maximum on-line paper capacity with options: 1,600 sheets.

Paper output: The standard output tray holds up to 500 sheets. Print jobs are output facedown and in the correct order.

Output tray capacity sensor: Yes.

Ability to process self-adhesive address labels: Avery 5351 labels performed satisfactorily in testing.

Ability to process transparencies: 3M PP2500 transparencies performed satisfactorily in testing.

Productivity

Warm-up: About 17.68 seconds from a cold start.

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TEST RESULTS AND OBSERVATIONS *continued*

BLI'S TESTED RASTER TIMES / PRINT SPEEDS

PostScript 3

Windows 2000	Word	PageMaker	Photoshop	Acrobat	Photoshop
File Type	Text/Graphic	Graphic/Text	Graphic	Graphic/Text	Graphic
File Extension	DOC	PM6	TIF	PDF	JPG
Pre-Raster File Size	114 KB	116 KB	20 MB	426 KB	248 KB
Post-Raster File Size	119 KB	130 KB	41.3 MB	744 KB	2.17 MB
First-Page Time (Seconds)	7.82	8.23	57.46	10.30	9.93
Speed Excluding First Page	26.59 ppm	26.59 ppm	26.61 ppm	26.60 ppm	26.62 ppm
Speed Including First Page	25.39 ppm	25.31 ppm	18.09 ppm	24.90 ppm	24.99 ppm

Manufacturer's rated speed: 26 ppm.

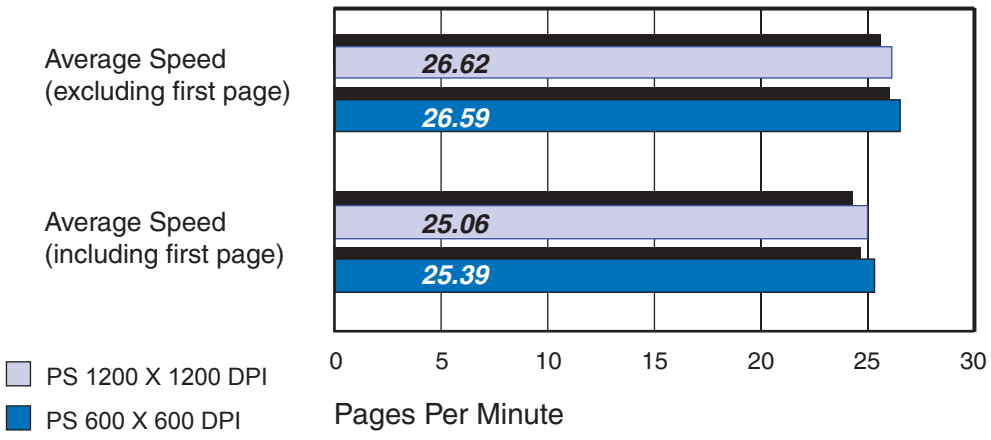
All files are printed in a quantity equal to twice the manufacturer's rated speed for the device. The Ricoh AP400N's print speeds were tested at 600 x 600 dpi using the PostScript 3 print driver.

First-page time indicates the time it took to RIP, image and deliver the first page of the test document set to the output tray.

Speed excluding first-page time indicates the time for printing the entire set of test originals, excluding first-page RIP and print times.

Speed including first-page time indicates the time for printing the entire set of test originals, including first-page RIP and print times.

BLI'S TESTED PRINT SPEED



Print speed is tested using BLI's test original with 6% page coverage. The test pages are printed in a quantity equal to double the vendor's rated print speed for the device in each mode tested (e.g., if the vendor's rated print speed is 20 ppm, 40 pages are printed). The Ricoh AP400N's print speeds were tested at 600 x 600 dpi and 1200 x 1200 dpi using the PostScript 3 print driver.

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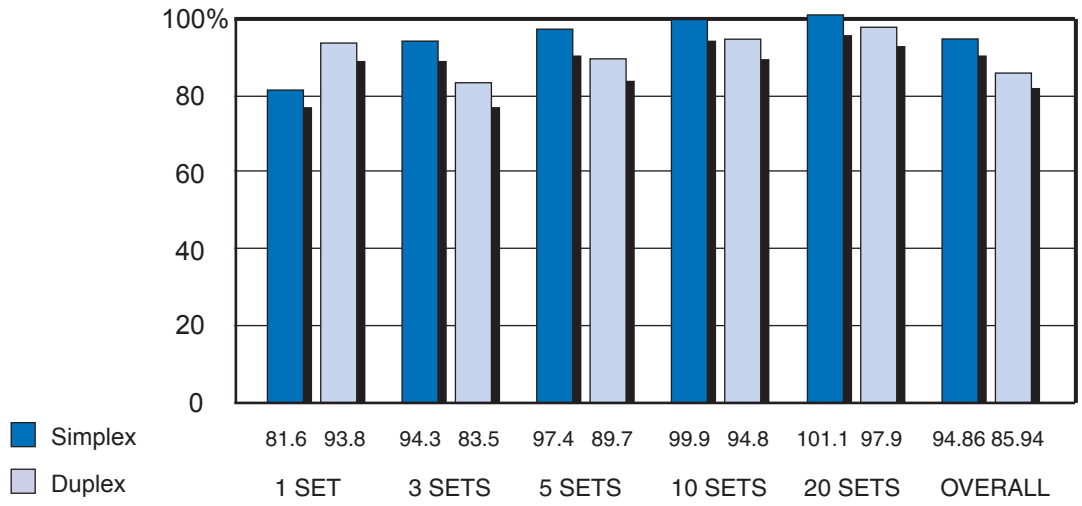
TEST RESULTS AND OBSERVATIONS *continued*

EFFICIENCY



BLI obtains the overall efficiency percentage by averaging the efficiency ratings (derived by dividing the tested speed of the device by the rated speed and then multiplying by 100) for each run length. Jobs are based on a 10-page document printed at 600 x 600 dpi using the PostScript 3 driver.

Print Quality

Text: Good
Line art: Good
Halftones: Good
Solids: Good

Comments: Output produced by the Ricoh AP400N's PostScript driver at 600 x 600 dpi is on the high end of the scale when compared with other 600-dpi engines; the characters were crisp, with a slight toner spray visible only when magnified, which is not uncommon at 600 dpi. Horizontal lines were clean with no stair-stepping apparent and thin lines on dark backgrounds were very clearly defined in the horizontal direction, but were not as clear in the vertical direction. In addition, the lines forming the circumference of circles were smooth and of consistent line weight. When printing at 1200 x 1200 dpi, there was no significant difference in the output. The 1200-dpi output also showed a slight toner spray around characters when magnified. The characters were easily read by the human eye down to the 6-point range, but were not as crisp as BLI technicians have seen from other 1200-dpi products. In both resolution modes, halftones were clearly visible from the 3% to 82% dot-fill levels of the grayscale.

Density of solid black printed image (based on four readings corresponding to four different locations on the original): Range, 1.40 to 1.43 for 600 x 600 dpi and 1.40 to 1.41 for 1200 x 1200 dpi (on a scale of 0 to 2.5, with 2.5 being as dark as would be possible under most circumstances).

Density range for laser/LED printers tested to date: 1.00 to 1.74.

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TEST RESULTS AND OBSERVATIONS *continued*

Networking and Connectivity

The Ricoh AP400N connects to networks via a standard 10/100BaseTX Ethernet interface. Users can either manually install PCL 5e, PCL 6, RPCS, PostScript 3 print drivers, SmartDeviceMonitor for Client and SmartDeviceMonitor for Admin; or use the Quick Install routine, to auto0install PCL 6 and RPCS print drivers and SmartDeviceMonitor for Client utility. An auto-run file on the CD starts the loading procedure to install the drivers. SmartDeviceMonitor for Client is required if the user wants feedback from the AP400N to his desktop. SmartDeviceMonitor creates a Ricoh-specific port on the user's workstation and allows the user to view network settings, view the job history on the printer, and configure pop-up messages and Recovery Printing. The AP400N can also be configured to use an LPR port or the Standard TCP/IP port on the workstation.

The SmartDeviceMonitor for Admin utility will search the network by IP/SPX protocol and locate all of the printers on the network. Once the devices are located, the administrator can double-click on any device to access a window showing the status of that device. The functions of SmartDeviceMonitor are fully supported by Ricoh and Ricoh-compatible products; other manufacturers' products are not fully supported by SmartDeviceMonitor Admin. There are three tabs displayed—Status, Configuration and Job History—and the displays are the same as with the SmartDeviceMonitor Client version. Status displays the current status of the device; Configuration (gives the administrator selections to display information about the device, the trays available and the amount of paper in each of the tray, as well as the options the device supports), System Info (displays basic system information about the device), Print Language (displays the resident PDL on the device), and Network I/F (displays the IPX or IP information of the device). Job History displays a history of print jobs printed on the device. More information is provided for Ricoh and compatible than for other vendors' output devices.

When using SmartDeviceMonitor Admin, the administrator can create groups of printers, lock the control panel, configure printer settings and manage the Ricoh Aficio AP400N, as well as any other device on the network—printer or multifunctional—with an embedded Web page. Also for all Ricoh and compatible devices on the network, Energy-Save mode settings can be adjusted, toner supply can be monitored and job histories can be viewed.

SmartDeviceMonitor for Client, which automatically creates the printer port on the client workstation, allows monitoring of the device and provides feedback regarding print job status and error and/or warning conditions to users. Print log details are accessible from SmartDeviceMonitor for Admin, SmartDeviceMonitor for Client (only the user's own print log) and the embedded Web page of the Aficio AP400N. The Aficio AP400N has the capability to have all of the print jobs stored on the hard drive and then spooled to the engine, in much the same way a print server would in a larger environment. In the case where there are a large number of users directly printing to the unit, this capability regulates data flow, preventing "bottlenecking" of multiple print jobs sent to the unit. The administrator can view this spool file and delete jobs from the hard drive.

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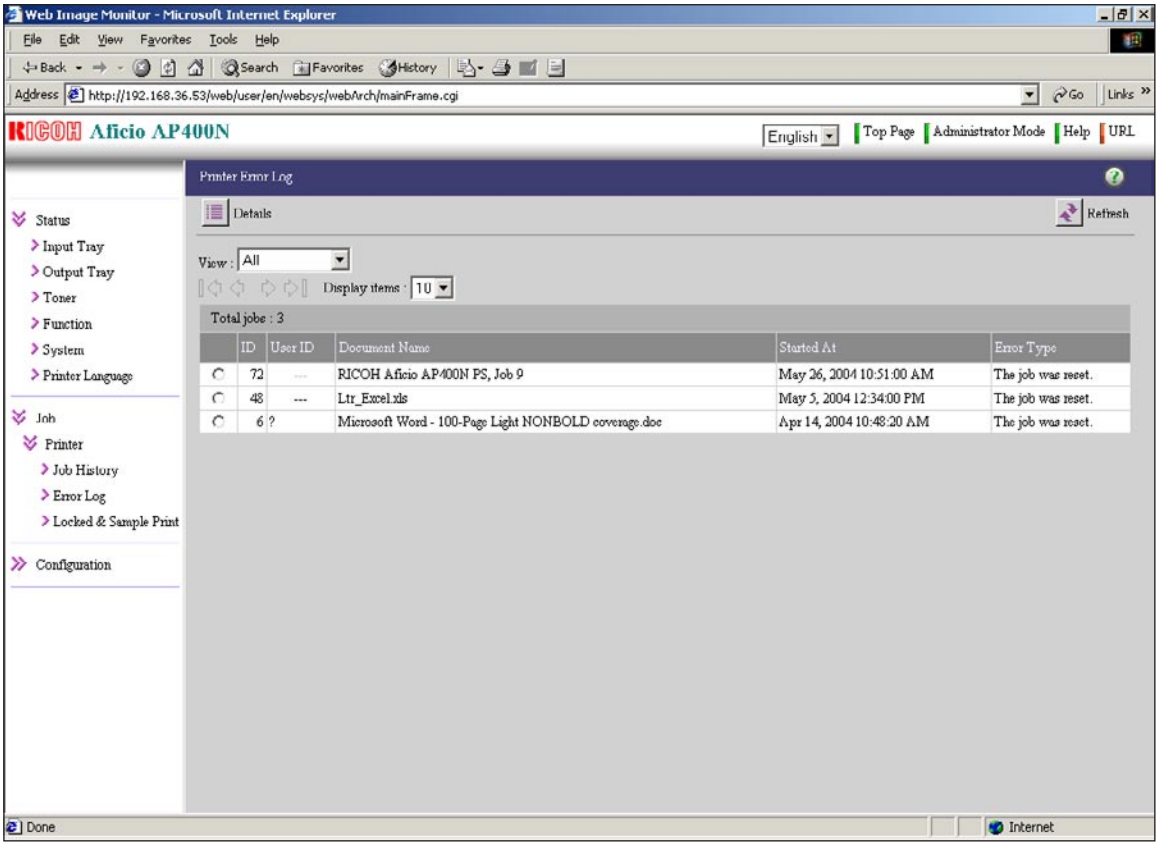
TEST RESULTS AND OBSERVATIONS *continued*


Web Image Monitor - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address http://192.168.36.53/web/user/en/websys/webArch/mainFrame.cgi
RICOH Aficio AP400N
English Top Page Administrator Mode Help URL
Printer Error Log
Details
Refresh
Status
Input Tray
Output Tray
Toner
Function
System
Printer Language
Job
Printer
Job History
Error Log
Locked & Sample Print
Configuration
View : All
Display items : 10
Total jobs : 3
ID User ID Document Name Started At Error Type
72 --- RICOH Aficio AP400N PS, Job 9 May 26, 2004 10:51:00 AM The job was reset.
48 --- Ltr_Excel.xls May 5, 2004 12:34:00 PM The job was reset.
6 ? Microsoft Word - 100-Page Light NONBOLD coverage.doc Apr 14, 2004 10:48:20 AM The job was reset.
Done
Internet

Web Image Monitor

The embedded Web page offers device status information such as paper size and gauge, toner gauge and temporary job history, as well as a listing of current settings and error messages. The Administrator mode of the embedded Web page is password-protected, so that only authorized users can make changes to the device. The administrator can view information and make changes under the following selections: Status (includes settings for Input Tray, Output Tray, Toner, Function, System and Print Language); Job (includes settings for Spool Printing, Job History, Error Log, Locked and Sample Print); Configuration (includes settings for Paper, System, Printer, E-mail and Notification—which allows four groups to be set up for 12 different selections for alert notification, such as when a certain percentage of toner or paper remains or the number of minutes after an error occurs that the notification should be sent); Network (includes settings for Interface, Protocol—TCP/IP, NetWare, AppleTalk, SMB and SNMP—System Log and Web page); Security (includes settings for Password, Access Control and IPP Authentication).

Other Bundled Software

DeskTopBinder V2 Lite is a document management program that enables users to file and view any application file or image. The software enables users to access documents stored on other Ricoh or compatible devices (e.g., RPCS printers or multifunctional

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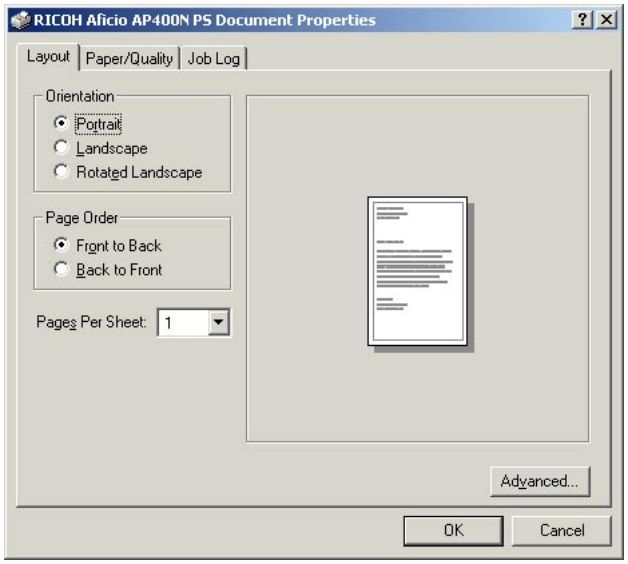
TEST RESULTS AND OBSERVATIONS *continued*

products) for print, scan, Document Server and Scan Router functions from their workstations. (As the Aficio AP400N is a single-function printer, only printing can be used with this application.) DeskTopBinder V2 Lite can be loaded from the initial screen when loading the print driver (however, since DeskTopBinder V2 Lite is contained on a separate CD-ROM, it requires changing CD-ROMs during the installation). DeskTopBinder V2 Lite can also display files other than image files using Easy Viewer or Viewer. In addition, it can link to other applications for image editing and an OCR program for conversion to text files. (No OCR software was bundled with the Aficio AP400N.) Although DeskTopBinder V2 Lite is most useful in conjunction with Ricoh multifunctional products, one nice feature of using RPCS and the Aficio AP400N is that the user can take different documents in different formats and, using the Job Builder function of DeskTopBinder, assemble them into one document to be printed out.

Applications compatibility (units are tested for compatibility on Windows 98 and 2000 platforms with Microsoft Word 2000, Microsoft PowerPoint2000, Adobe PageMaker 7.0, Microsoft Excel 2000, Adobe PhotoShop 7.0 and Adobe Acrobat 5.0 using 25 application test files, which contain graphics, halftone images, tables, etc., enabling BLI technicians to evaluate memory usage, file processing, font-rendering and grayscale capabilities): Good. The Ricoh AP400N's print drivers were found to be fully compatible with all five Windows programs used in testing, with no problems encountered.

Print drivers: The included PCL 5e, PCL 6, Adobe PostScript 3 and RPSC print drivers support Windows 95, 98, 2000, NT 4.0, Me and XP, as well as Mac OS 8.6 and later. The print drivers tested (for Windows 98 and 2000) were well designed and easy to use. The PCL 5e and PCL 6 drivers were very similar in layout and appearance, while, as is typical, Adobe PostScript 3 differs in appearance. The proprietary RPCS driver also features a different layout. During installation, the SmartDeviceMonitor utility automatically locates the device and displays the IP address to create the port and automatically detects the installed hardware when using the PCL drivers. For the PostScript and RPCS drivers, the configured options must be manually specified by the user.



Windows 2000 PostScript Driver

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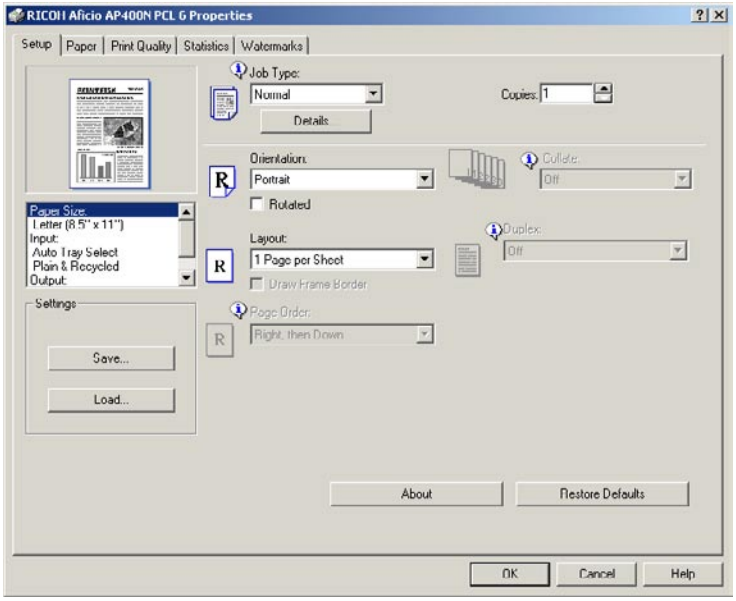
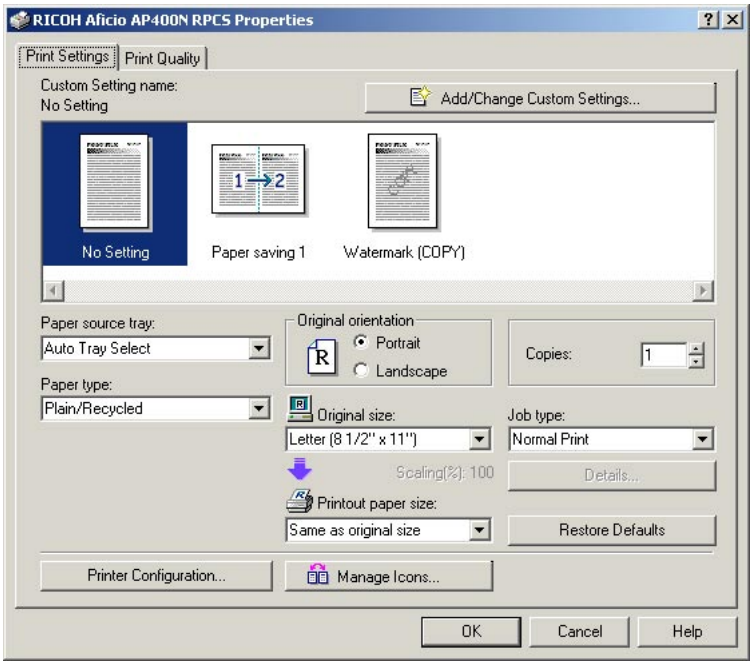
TEST RESULTS AND OBSERVATIONS *continued*



Windows 2000 PCL 6 Driver



Windows 2000 Ricoh RPCS Driver

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TEST RESULTS AND OBSERVATIONS *continued*

RICOH AP400N PRINT DRIVER FEATURES

Features	Windows 98 SE PCL 6	Windows 98 SE PostScript 3	Windows 98 SE Ricoh RPCS	Windows 2000 PCL 6	Windows 2000 PostScript 3	Windows 2000 Ricoh RPCS
Auto Feature/ Device Detection	Yes	No	Yes	Yes	No	Yes
Booklet Printing	Yes	No	Yes	Yes	No	Yes
Collate Sets	Yes	Yes	Yes	Yes	Yes	Yes
Insertion (Max Paper Sources Per Job)	4	2	1	4	1	1
Mirror Image	No	Yes	No	No	Yes	No
Negative Image	No	Yes	No	No	Yes	No
N-up Printing	2 to 16	2 to 16	2 to 16	2 to 16	2 to 16	2 to 16
Overlay	No	No	Yes	No	No	Yes
Paper Gauge	No	No	No	No	No	No
Print and Hold	No	No	No	No	No	No
Proof Print	Yes	Yes	Yes	Yes	Yes	Yes
Quantity Selection	Up to 999	No selection in driver	Up to 999	Up to 999	Up to 32,767	Up to 999
Reduction/ Enlargement	25 to 400%	25 to 400%	Auto	25 to 400%	1-1000%	Auto
Resolution Modes (dpi)	600 x 600, 1200 x 1200	600 x 600, 1200 x 1200	300 x 300 600 x 600 1200 x 1200	600 x 600 1200 x 1200	600 x 600 1200 x 1200	300 x 300 600 x 600 1200 x 1200
Save Settings	Yes	Yes	Yes	Yes	Yes	Yes
Secure Print	Yes[1]	Yes[1]	Yes[1]	Yes[1]	Yes[1]	Yes[1]
Watermarks/ Custom Watermarks	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes

[1] Locked Print feature

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TEST RESULTS AND OBSERVATIONS *continued*

RIP once/print many: When using the PostScript on Windows 2000, there are three different options from which to select collate: the Windows print screen within an application and two selections from within the driver—"Windows collation" and "driver collation"—which are on the same tab in the driver (which could cause some confusion for the user). As long as the user chooses the "driver collation" selection from within the driver or selects collation from the Windows print screen within an application, the file size is not affected and the output will be properly collated.

When using the PCL driver, the user must configure the printer driver Properties to indicate if he/she will use the collate selection from the Windows print screen within an application (which is the default) or the collate selection in the driver (either selection works properly). Once that selection is made, the user should use that method. There is no collation selection from the proprietary RPCS driver. However, the proprietary RPCS driver will automatically collate the document if multiple copies of a multiple page job are requested.

Job log/accounting: Yes. Provided the unit is configured with the optional hard drive, print logs are maintained via SmartDeviceMonitor and the Web utility.

PERFORMANCE OF TESTED SPECIAL FEATURES

Multipurpose Tray

The 100-sheet bypass tray accommodates sheets ranging in size from 3-1/2" x 5-1/2" to 8-1/2" x 17" and in weight from 16-lb. to 90-lb. bond, as well as envelopes (Monarch, Com 10, DL, C5 and C6). With the PCL and RPCS driver, the user must select the multipurpose tray as the paper source from the print driver and then wait for the print job to be spooled and RIPped, after which two different screens, "Load Paper Bypass Tray," and "[SIZE] [TYPE]," will alternate on the LCD. The user then places paper in the bypass and printing begins. Users may also preload paper into the bypass and send the print job. The process for the PostScript 3 driver is more involved and could be frustrating to the user. When using PostScript 3, the user would send the print job with bypass selected; if the size of paper selected resides in the printer it will be pulled from one of the trays and bypass will be ignored. With PostScript, printing on paper fed from the bypass tray only works if the paper size selected is different from what already resides in the printer. If the paper requested is not in the printer, the LCD prompts the user to load the paper in the bypass, as with the other drivers.

ENVIRONMENTAL SPECIFICATIONS

Electrical system: 120V V, 50/60 Hz, 7.9 amps. The unit tested had a three-wire cord (grounded), 8' 3" length, and carried UL approval for the United States and Canada.

Energy Star compliance: Ricoh states that the AP400N meets Energy Star requirements.

Paper fault: None. (Georgia-Pacific Spectrum Xerographic Bond and Georgia-Pacific GeoCycle recycled paper containing 30% post-consumer fiber were used in this test unit.)

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PHYSICAL SPECIFICATIONS

DIMENSIONS AND WEIGHTS				
Printer	**Height**	**Width**	**Depth**	**Weight**
Ricoh AP400N	13.6"	15.3"	17.7"	37.5 lbs.

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